APPROACH TO FOREIGN MAP READING

PART II[1]

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Not only in the preparation of war plans in times of peace but also in carrying out those plans in times of war, an officer must put his knowledge to practical use. The importance of being able to do this in reading foreign maps can not be too strongly emphasized. In global warfare, in which maps made in many foreign countries may have to be utilized, a knowledge of some of their characteristics, the peculiarities of the languages and alphabets, and a guide to a logical approach of study are invaluable. Therefore, much is given here on the technicalities of languages and names, and in addition a suggestion for a method of approach which should always be borne in mind to help make reading and interpreting a foreign map easier and more accurate: "Compare the foreign map with another one in a language you know and learn to interpret the former by this comparison."

It will usually be difficult to secure an English map of the same scale as the maps which can be obtained in non-English speaking countries; therefore, the comparison mentioned is not going to be one in which many points can be compared. However, if the map observer who is required to use a map in a language or script with which he is unfamiliar will take the best available English map and from it mark on the foreign one the names, localities, and features which he can identify by their geographic location, he will have accomplished more than he realizes. There is no better way of learning than by comparing. Where possible, of course, it is best to secure several maps for comparison.

[1]The first section of this article was published in THE FIELD ARTILLERY JOURNAL for October, 1942.

INSERT
JAPANESE TOPOGRAPHICAL MAP
OF HAKODATE AREA

In dealing with all foreign maps there is one initial obstacle which the map reader must surmount in order to read or use the map at all. The "obstacle" is the learning of the local alphabet, geographical terms, and the symbols peculiar to the foreign map. This situation is comparable to that of entering a foreign country with a vocabulary sufficient to allow one to live, eat, and travel without undue difficulty. The individual can not enter into any involved conversation, but can get along. So it is with the facts brought out here; the map reader is able to "get along." Complete mastery of the subject would, however, require lengthy study and application, as is true with any subject.

MAP SYMBOLS

As mentioned in the first section of this article,[1] the map should be carefully analyzed by following the outlined steps in observation. To "decipher" any unknown subject it is necessary to work from some known factor. Symbols follow the same general form the world over and it is only necessary to seek out their detailed or local peculiarities. Therefore, the map reader should tackle symbols next. If the map has a legend, a dictionary in that particular foreign language will clarify the symbols, as their definition is generally given in words. A study and mastery of symbols used on United States topographic maps will give an officer the best foundation possible for reading foreign symbols. Our topographic symbols are excellent in that they are simple and almost self explanatory of the subjects they portray. One can

TABLE I.—COMPARISON OF METRIC, ENGLISH AND RUSSIAN LINEAR MEASURE (APPROX.)

Metric System	*English System*	*Russian System*
1 millimeter	.04 inch	
1 centimeter	.39 inch	0.4 *diuim, diuīme*
1 decimeter	3.93 inch	
1 meter	39.37 inches (1.1 yds.)	1.4 *arshin(e)*
1 kilometer	3,280 ft., 1,093 yds., or ⅝ mi. (less 19 ft. 2 in.)	.93 *verst*
25.4 mm., 2.54 cm.	1 inch	1 *diuim, diuīme*
30.48 cm., or .30 meter	1 foot	1 *fut* or 8 *vershkov*
91.44 cm., or .91 meter	1 yard	3 *fut* or 1.3 *arshin(e)*
1.61 km., or 1,610 meters	1 mile (statute, 5,280 ft.)	1.5 *verst* or 750 *sazhenei*
1.85 km., or 1,850 meters	1 mile (nautical, 6,080 ft.)	
2.54 cm.	1 inch	1 *diuim, diuīme*
4.44 cm.	1¾ inches	1 *vershok*
0.30 meter	12 inches	1 *fut* (foot)
0.71 meter	28 inches	1 *arshin* = 16 *vershkov*
2.13 meters	7 feet	1 *sazhen* = 3 *archin(e)*
1.07 km.	.66 mile, or 3,500 ft.	1 *verst* = 500 *sazhenei*

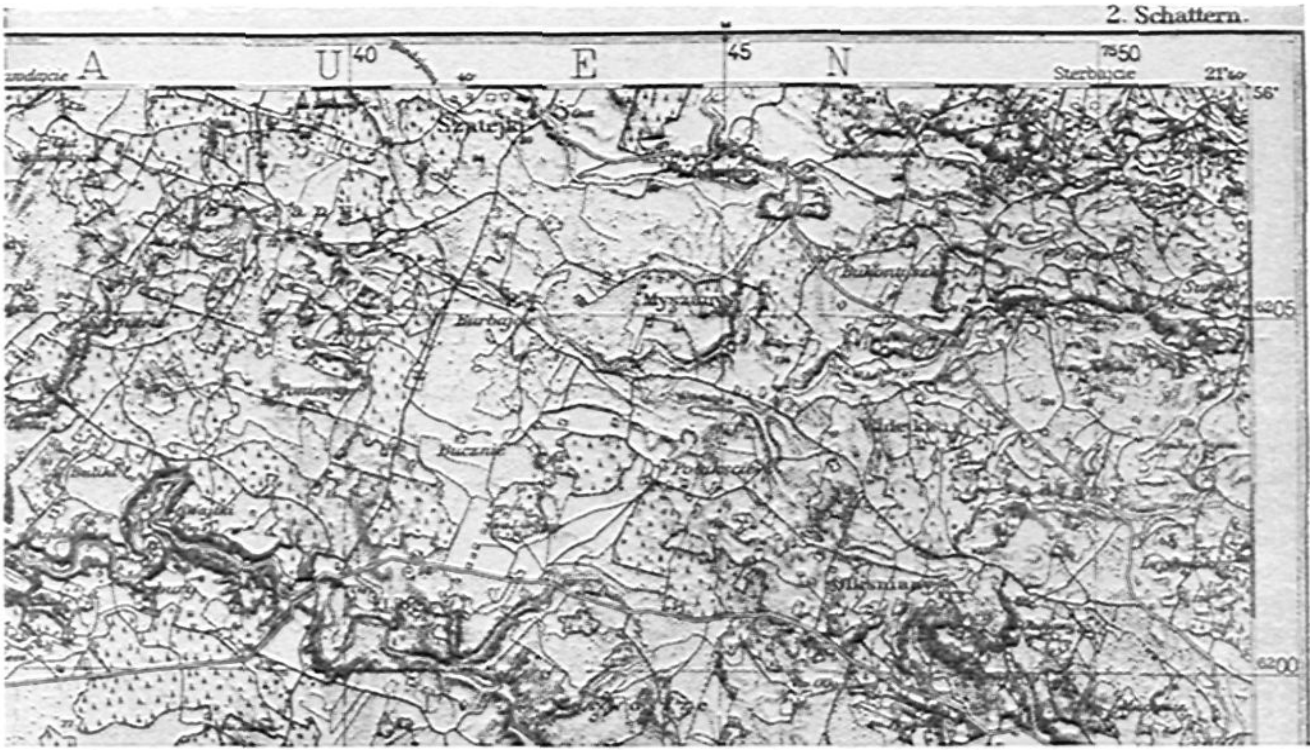


Figure 1.—German map, scale 1:100,000. Figures for heights on the map are shown in meters. "N" at top and 6200, 6205 on right margin are part of grid system. Topographical symbols below apply to this map.

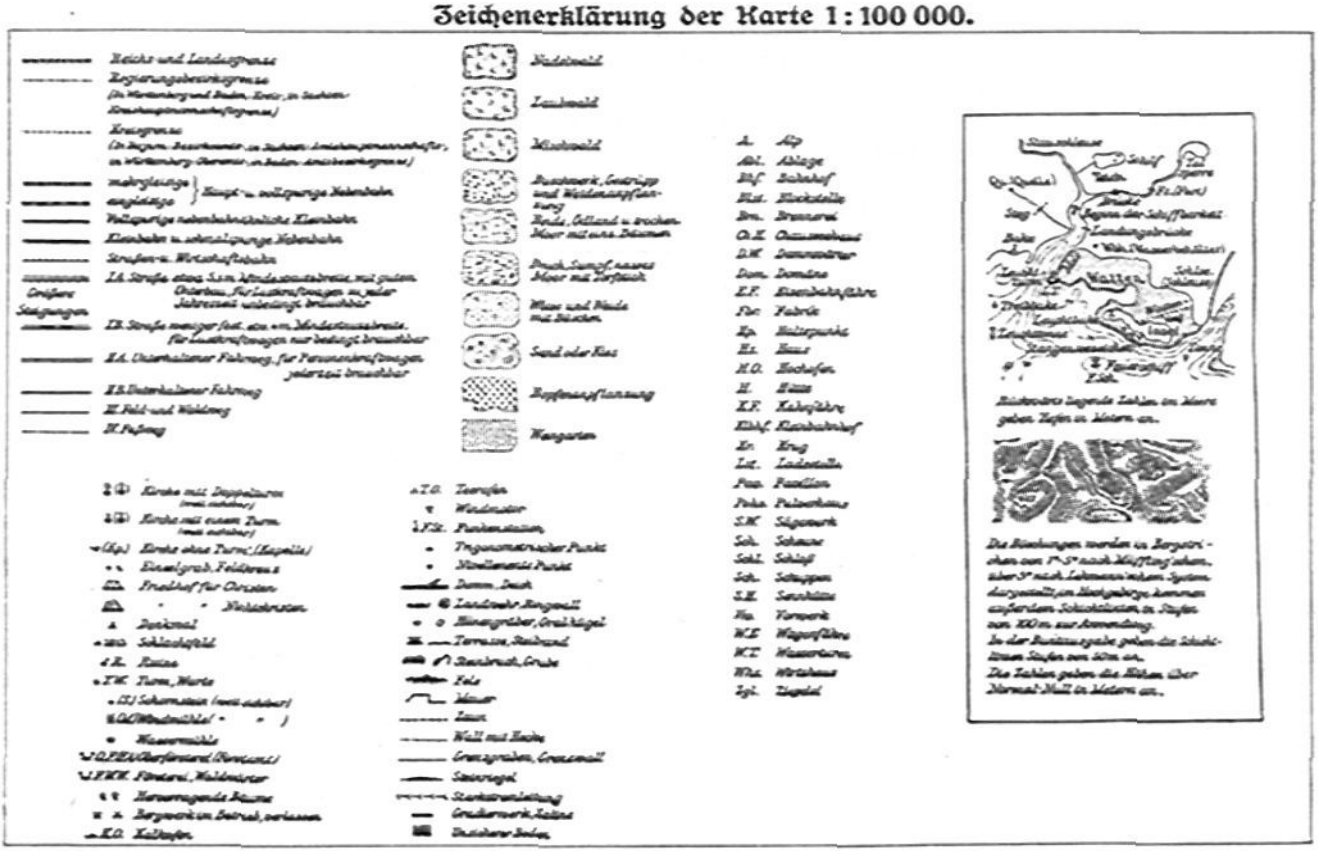


Figure 2.—Legend to German maps of scale 1:100,000. Sample map on right shows use of the symbols.

Figure 3.—Symbols for German map of scale 1:25,000. Map at top has been reduced to 2/3 actual size. It illustrates the use of the symbols shown.

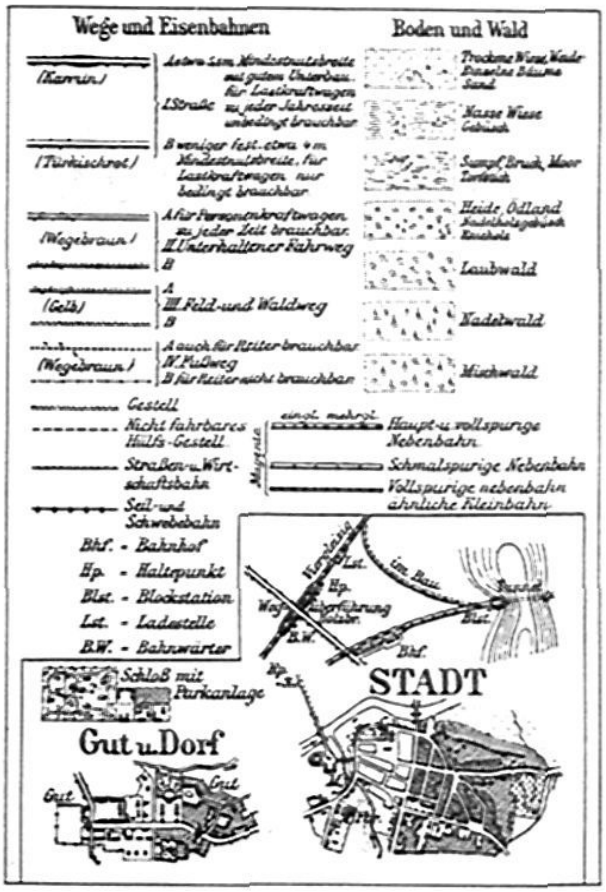


Figure 4.—Sample of German map containing symbols for railroads, highways, roads, types of forests and abbreviations for railroad switches, stops, and stations, towns and cities.

expect foreign symbols to be a little more complex and, sometimes, to branch off into details.[2] (See Figures 1, 2, 3, and 4.)

Systems of Linear Measure.—Foreign maps differ materially from our own standard military maps in respect to grid system and linear measure. We are used to stating distances in terms of statute miles and yards whereas the European speaks in terms of kilometers and meters.

The Metric System is in general use in most foreign countries, and a working knowledge of it is necessary in order to make effective use of foreign maps. Only actual practice can acquaint one with the differences between the Metric and our own system.

Linear measure of the Metric System starts with the *millimeter* and progresses up to the *kilometer*. The former equals about four hundredths of an inch and for all practical purposes the latter can be considered generally as six-tenths of a mile.

The best rule of thumb to use with meters is to remember the proportion "one meter equals one and one-tenth yards." (See Table I.)

Grids.—With few exceptions, foreign maps, like our own, bear the geographical grid (that is lines of latitude and longitude). If all the actual grid lines do not appear on the map, the border will be divided up so that they may be drawn. The "Atlas Grid" with its combination of letters and figures is often used. (See Figure 1.)

The only real difference between foreign grids and our own lies in their use of meters where we use yards. For instance, on a map of scale 1:100,000, a 5,000-meter grid square would just fall short of equalling 5,500 yards on ground or 2 inches on the map. It would be normal for us to use 5,000-yard grid squares on a map of this scale. Contour intervals on foreign maps are reckoned in terms of meters also.

Almost without exception longitude is reckoned for all nations from the Greenwich Observatory just outside London, England. However, exceptions do occur. Some nationalities of map makers choose to reckon longitude from a position in their own country. Often French maps reckon it from Paris rather than Greenwich, and some German maps from Berlin. This is illustrated in the accompanying map of Morocco, Figure 7. However, these are still the exception. Latitude is, of course, always measured from the equator.

Relief.—This is portrayed in one of four ways or a combination of several. These four ways are contours, shading, hachuring, and spot heights. Hachuring is a favorite European method. (See Figure 5.) Depending

[2]A detailed treatment of conventional signs and symbols used on maps of the following countries is to be found in *F.M. 30-22, Military Intelligence—Foreign Conventional Signs and Symbols* (July, 1942); Italy, France, Germany, Great Britain, Japan, Russia, Spain, and Turkey. The manual contains much information in compact form. Its study is recommended.

upon the angle of slope, several types of hachuring are used. It best portrays terrain of sharp relief contrasts, but is weak on showing gentle slopes.

Shading is also favored by many foreign publishers, but this method, like hachuring, serves more to give an eye picture rather than actual land heights. Shading is excellent for showing both rugged and rolling terrain, but no method can substitute for contours. Spot heights in foreign maps are almost without exception shown in meters, not feet. The heights will appear in figures and one should always consult the legend to find out whether the figures appear in feet or meters.

The combination of shading and contours is most effectively used on the Japanese map (Insert) illustrated here. This is, by the way, an excellent map for teaching these two methods of showing relief.

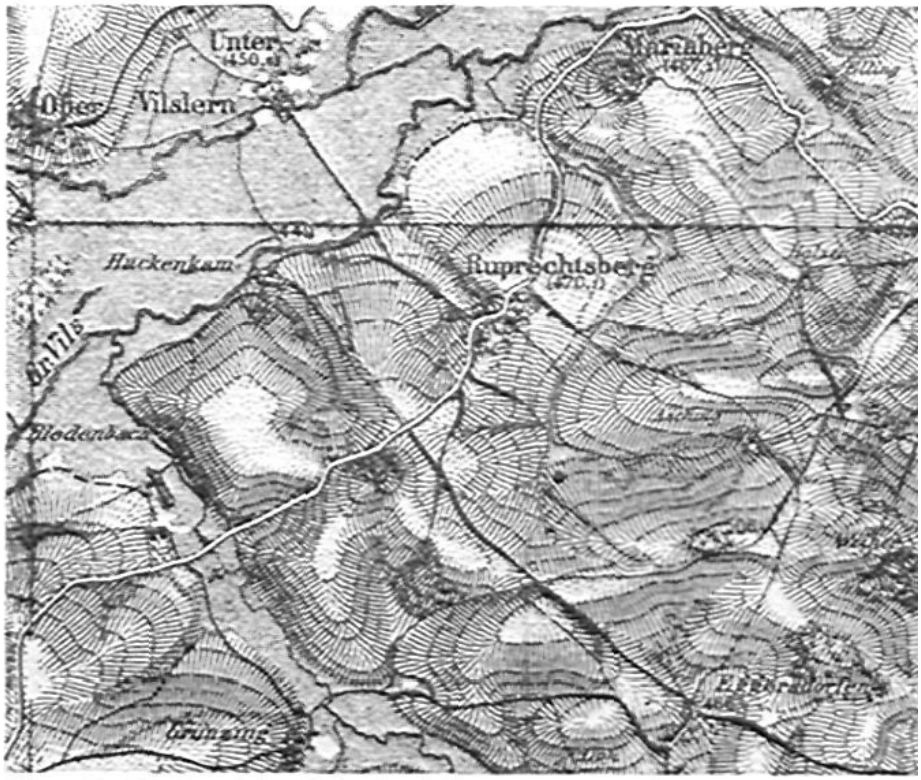


Figure 5.—Section of heavily-hachured European map, scale 1:25,000, Approximate contours are used here with hachuring more to show details of the terrain rather than definite contour heights.

RUSSIAN MAPS

Russian maps represent a step between the simple foreign maps and the more difficult ones. The more simple foreign maps are those using the Latin alphabet such as British, French, Spanish, Italian, German, Norwegian, et cetera. The more difficult ones are Chinese, Japanese, Arabic, Siamese, et cetera, which use special characters and ideographs.

Russian maps use the Cyrillic alphabet which is not greatly removed from the Latin. The first step in learning to read Russian maps is to master the Russian alphabet and know the English equivalents for each Russian letter. This will allow the reader to transliterate Russian names. Unless the observer does know Russian, their map names will have no significance until transliterated. The Table here gives English equivalents of the Russian characters now in use.

To render Russian map names in English it is simply necessary to substitute the proper English equivalent for the respective Russian letters. This is performed by the use of a transliteration table, Table II.

To use this table one simply starts out by taking the larger geographical names and substituting the English for the Russian characters. If room is available they can be written above the Russian name.

For example, ЛЕНИНГРАД would be LENINGRAD. It thus can be seen that this is simply a letter for letter substitution. In the case of KHARKOV (ХАРЬКОВ), we find the use of the "mute soft sign" which is Ь. As shown in the footnote of the alphabet table, this is often transliterated as ' and the name would appear as KHAR'KOV. However, it is recommended that when this letter and the Russian letter for the "mute hard sign" appear in map names that they simply be omitted in the transliterated (English) name. Thus the proper rendition here would be KHARKOV. These "soft" and "hard" signs affect pronunciation, not transliteration.

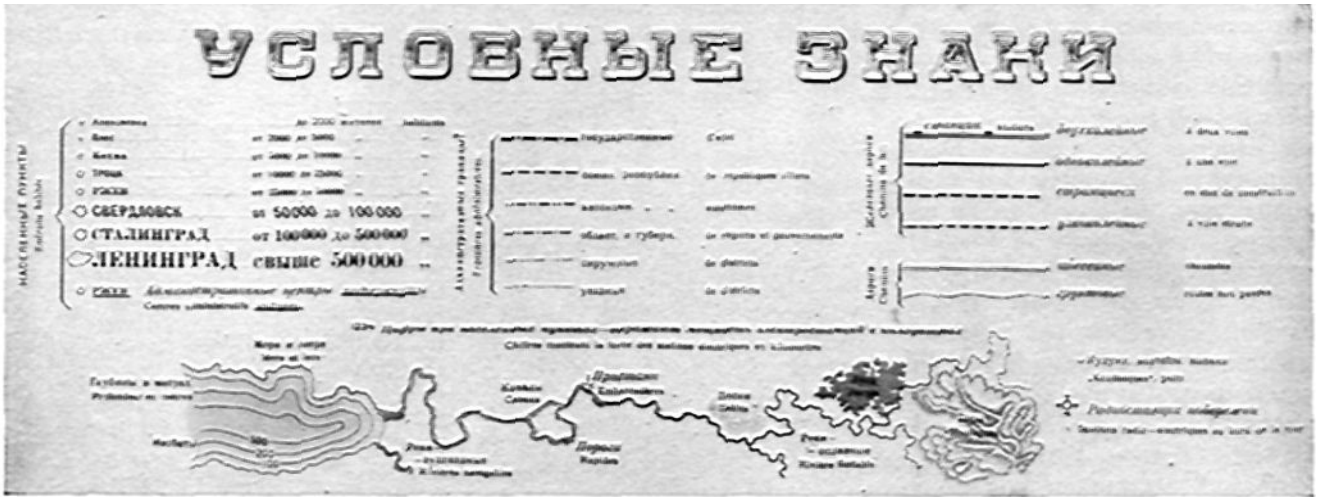
Do not mistake the Russian Б (B) for Ъ, which is the "mute hard sign," or Ь, the "mute soft sign." On October 15, 1918, the Russian alphabet was revised and shortened.

TABLE II.—TRANSLITERATION OF THE RUSSIAN (CYRILLIC) ALPHABET as officially adopted by the United States Library of Congress

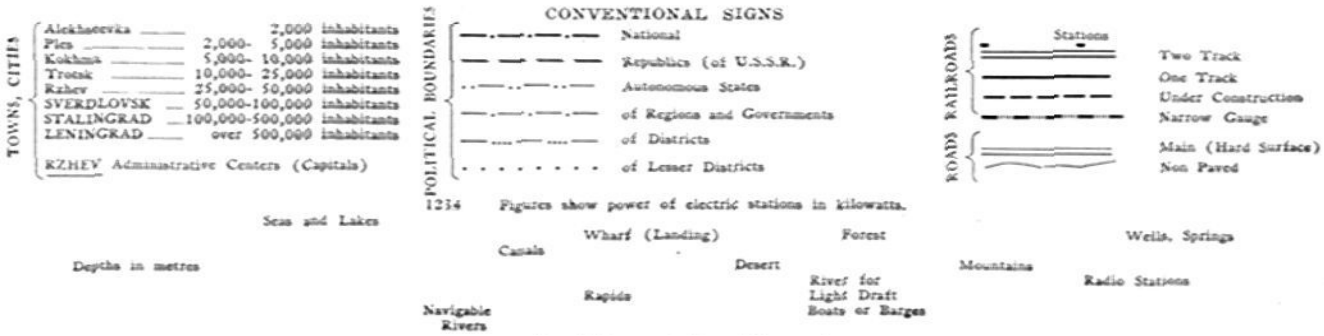
Russian	English	Russian	English
А а	A	Р р	R
Б б	B	С с	S
В в	V	Т т	T
Г г	G[1] (H)	У у	U
Д д	D	Ф ф	F
Е е	E	Х х	KH
Ё ё	E	Ц ц	TS
Ж ж	ZH[2]	Ч ч	CH
З з	Z	Ш ш	SH
И и	I	Щ щ	SHCH
Й й	I	Ъ ъ	Mute, hard sign[3]
К к	K	Ы ы	Y
Л л	L	Ь ь	Mute, soft sign[4]
М м	M	Э э	E
Н н	N	Ю ю	IU[5]
О о	O	Я я	IA[6]
П п	P		

[1]A, when it stands for A in foreign words. [2]British transliteration tables list this as j. [3]Recently abolished. Never transliterated. [4]It softens previous consonant. Often transliterated as '. [5]Seen as YU in British tables. [6]Seen as YA in British tables.

Figure 6.—Typical Russian cartography. Area around Moskva, scale 1:1,500,000.



Legend to Russian map above



English translation of legend

The old one contained several more characters which do appear on very old maps; they should be disregarded when seen.

Russian Map Names (See Table III).—The most difficult part in reading Russian maps lies in reading names which appear in script. For this reason a special table has been made to show Russian geographical names: first the English name, second in transliterated Russian, third in Russian capital letters.

Town, city, district, regional, province, republic, and other such political names will appear on Russian maps in printed capital-letter form. Mountains, rivers, lakes, and small geographical features will generally appear in Russian script. Often, to add to difficulty in reading these names, they will be in blue, with town and city names printed over them in black. (See Russian map and legend, Figure 6. Also see first section of article for additional details.)

Since 1917 Russian place names, mainly town and city, have been undergoing radical changes. The first changes occurred when the Soviet Government undertook the changing of names which sounded of the Tsarist regime. Such names as *St. Petersburg, Aleksandrovsk*, and *Ekaterinoslav* became *Leningrad, Zaporozhe*, and *Dnepropetrovsk*. The process has been continual since the revolution. In recent years many places have again been renamed, this time in honor of Soviet statesmen and heroes.

Symbols.—The best and most authoritative source in English for the study of Russian symbols is the War Department's *TM 30-254, Military Dictionary* (*Russian, English — English, Russian*). It contains the conventional signs and military symbols used by the Soviet Army. Their topographic symbols bear resemblance to ours, and are well executed. This manual should be the standard reference when using or studying Russian maps. This Technical Manual lacks the Russian script in the present edition (which is a temporary one); however, it is complete in all other respects.

Russian bench marks are represented by triangles with a dot in the center of each; triangulation points are shown by squares with dots. Symbols for sand, clay, stone pits, as well as quarries and factories use initials beside them. The sign for a well is a small circle with a dot in center, and depending on the type of well, the symbol is accompanied by an initial.

Cemeteries are characterized by two types of symbols:

TABLE III.—TRANSLATION OF RUSSIAN GEOGRAPHICAL NAMES

English	*Transliterated Russian*	*Russian (Capital letters)*	*Russian Script*
City	Gorod	ГОРОД	*Город*
Village, Town	Selo	СЕЛО	*Село*
Settlement	Selenie	СЕЛЕНИЕ	*Селение*
Fort	Fort	ФОРТ	*Форт*
Fortress	Krepost	КРЕПОСТЬ	*Крепост*
Castle	Zamok	ЗАМОК	*Замок*
House	Dom	ДОМ	*Дом*
Bridge	Most	МОСТ	*Мост*
Land	Zemlia	ЗЕМЛЯ	*Земя*
Coast, Shore	Bereg	БЕРЕГ	*Берег*
Island	Ostrov	ОСТРОВ	*Остров*
Peninsula	Poluostrov	ПОЛУОСТРОВ	*Полуостров*
Plain, Field	Ravnina	РАВНИНА	*Равнина*
Desert	Pustynia	ПУСТЫНЯ	*Пустыня*
Steppe	Step	СТЕПЬ	*Степь*
Swamp	Boloto	БОЛОТО	*Болото*
Forest	Les	ЛЕС	*Лес*
Plateau	Ploskogorie	ПЛОСКОГОРИЕ	*Плоскогорие*
Mountain or Hill	Gora	ГОРА	*Гора*
Ridge, Range (Mountains)	Khrebet	ХРЕБЕТ	*Хребет*
Mountain Ridge	Gornyi Khrebet	ГОРНЫЙ ХРЕБЕТ	*Горный Хребет*
Cape	Mys	МЫС	*Мыс*
Mountains	Gory	ГОРЫ	*Горы*
Peak	Vershina	ВЕРШИНА	*Вершина*
Pass	Prokhod	ПРОХОД	*Проход*
Valley	Dolina	ДОЛИНА	*Долина*
North	Sever	СЕВЕР	*Север*
South	Iug	ЮГ	*Юг*
East	Vostok	ВОСТОК	*Восток*
West	Zapad	ЗАПАД	*Запад*
Snow	Sneg	СНЕГ	*Снег*
Water	Voda	ВОДА	*Вода*
Spring, Well	Kolodez	КОЛОДЕЗЬ	*Колодезь*
Stream	Protok	ПРОТОК	*Проток*
River	Reka	РЕКА	*Река*
Lake	Ozero	ОЗЕРО	*Озеро*
Sea	More	МОРЕ	*Море*
Gulf	Zaliv	ЗАЛИВ	*Залив*
Sound, Strait	Proliv	ПРОЛИВ	*Пролив*
Port, Harbor	Port, Gavan	ПОРТ, ГАВАНЬ	*Порт, Гавань*
Great	Veliki	ВЕЛИКИ	*Велики*
Small	Malyi	МАЛЫЙ	*Малый*
Long	Dlinnyi	ДЛИННЫЙ	*Длинный*
Old (former)	Prezhni[2]	ПРЕЖНИИ	*Прежний*
New	Novyi	НОВЫЙ	*Новый*
White	Belyi	БЕЛЫЙ	*Белый*
Black	Chernyi	ЧЕРНЫЙ	*Черный*
Red	Krasnyi	КРАСНЫЙ	*Красный*
Green	Zelenyi	ЗЕЛЕНЫЙ	*Зеленый*
Blue	Sini[2]	СИНИИ	*Синий*
Yellow	Zheltyi	ЖЕЛТЫЙ	*Желтый*
Road	Doroga	ДОРОГА	*Дорога*
Highway	Bolshak	БОЛЬШАК	*Большак*
Highway[1]	Bolshaia Doroga	БОЛЬШАЯ ДОРОГА	*Большая Дорога*

[1]Actually, Big Road. [2]Final "I" dropped at end of word.

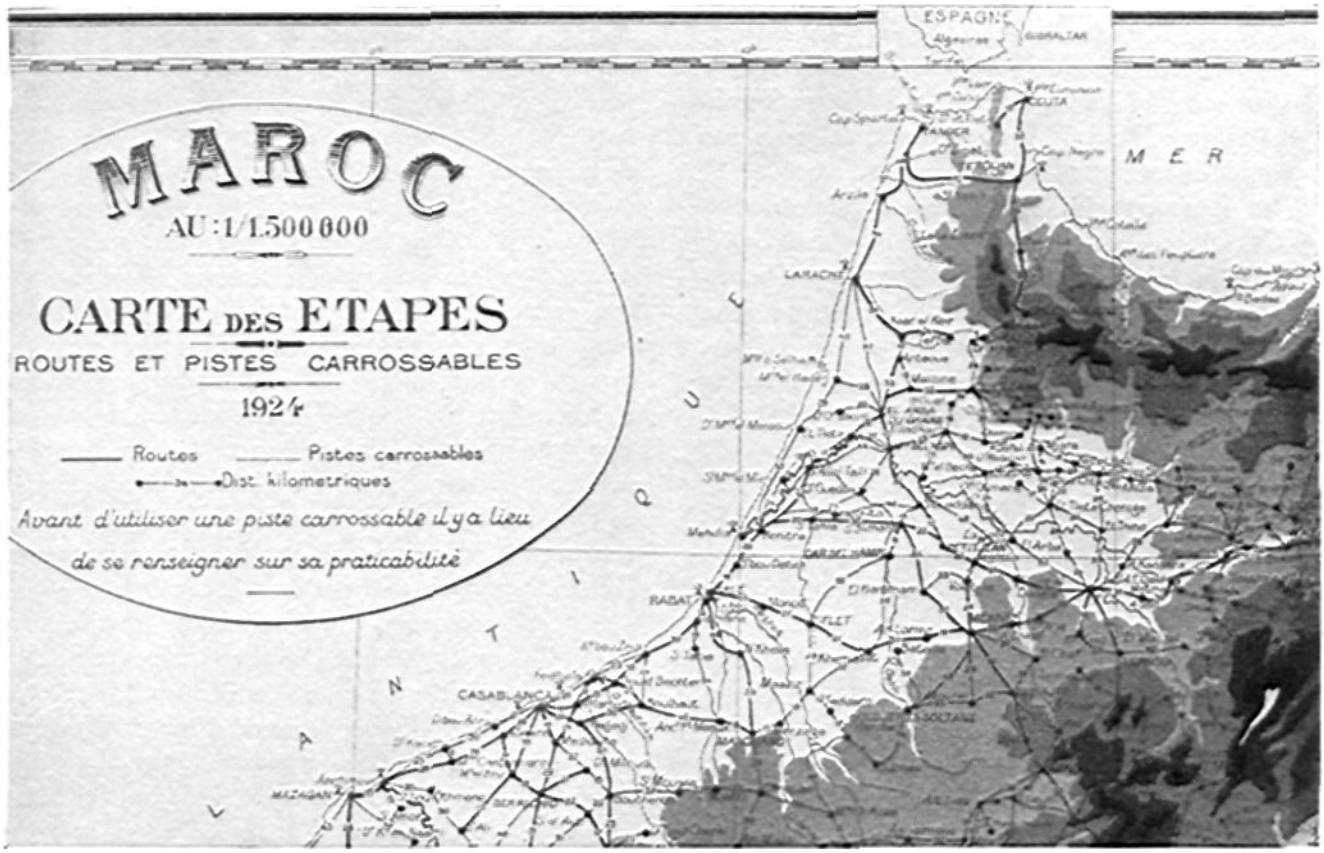


Figure 7.—A portion of a French map of Morocco, scale 1:1,500,000 (reduced about ½). Longitude on this map is reckoned east and west of Paris meridian.

one for Christian, the other for non-Christian cemeteries. Factories have two types of symbols depending upon whether they have smoke stacks or not. Milestones, sign posts, and silos are marked on maps where they are prominent. "Terrain patterns," such as swamps, meadows, mixed forest, thin forest, et cetera, are classified and symbolized in almost the same fashion as on our topographic maps.

Russian Linear Measurement.—The verst is the nearest equivalent of our statute mile. It equals 3,500 feet, .66 of a mile, or 1.07 kilometers. Other units of Russian measure are shown in Table I.

Maps of Arabic-Speaking Countries

Maps of areas in which the Arabic language predominates are for the most part published in English or French, though some are to be found in Arabic script. As Arabic is a study in itself and for the reason that English maps are obtainable, the names shown in the table of geographical equivalents are the English transliterations of the Arabic names (Table VII).

The transliteration of Arabic into Latin script has long been a subject over which there has been a difference of opinion. The question has been whether place names should be "decoded" with the phonetic equivalent, or with direct transliteration of Arabic characters. The official British sources use the latter method on their maps because of the existence of a wide difference of pronunciations within even small localities. For example, one character in Arabic script may have any one of the following equivalents in so far as its prounciation is concerned: *dz, z, dh, dth*, and *d*.

The British Government has, however, spelled names in Mesopotamia, India, Anglo-Egyptian Sudan, and Egypt exactly according to the official surveys of those respective countries.

It is difficult to pick up two maps of the same area by different publishers in English and not find some difference of spellings between place names. Here the map observer's patience will be tried. Adopt the spellings of a Government or military map in preference to civilian ones.

To make map reading practical in Arabic-speaking countries, the map reader will best be understood by natives if he pronounces Arabic script according to the table in the Royal (British) Geographical Society's *Alphabets of Foreign Languages Transcribed into English*. This transliteration table differs some from the one in the United States Government's "Foreign Languages," and is recommended because it is more explanatory and practical. Moreover, this latter publication is now out of print.

Good British maps exist for Anglo-Egyptian Sudan, Arabia, Egypt, Iraq, Transjordan, and Palestine; French for Syria, Algeria, Morocco, Tunisia, and all other parts of French Africa (see Figure 7). One of the best sources for a detailed study of the latter is the large French atlas entitled *"Atlas des Colonies Francais. Protectorats et Territoires Sous Mandat de la France."* This was published in Paris in 1938 by *Societe d'Editions Geographique*

Maritimes et Coloniales. The atlas is well worth viewing if for no other reason than to see superb cartography.

Italian maps of Libya, Eritrea, and Italian Somaliland in existence before this war did not measure up to British and French standards.

In all of these countries, with the exception of their coastal areas, the Nile Valley, Palestine, and Syria, much has yet to be done in the matter of surveying. The cartographer still lacks detailed and accurate field notes from which he can plot accurate information on the map. Blank spaces exist on maps of desert areas, but they also exist on other areas from lack of proper survey.

CHINESE MAPS

China has been backward in the compilation and publishing of maps. The country is inadequately surveyed. The coastal regions and a few of the adjacent provinces are the better mapped portions of that nation. The interior of China, except for the location of major geographical features, is relatively unmapped.

Not all Chinese maps are printed in the Chinese characters. Some are in English, and other nations have made maps of that area too. Because of the small amount of cross-country travel within China prior to the present conflict the demand for maps has not been great enough to warrant any production.

TABLE IV.—CHINESE GEOGRAPHICAL TERMS

English	*Chinese*
city, town	ch'eng fu, shih, hsien
fortress, fort	lei
land	ti
island	tao
plain, field	t'ien, p'ing yüan
forest, wood	lin
plateau	kao yüan
mountains	shan
rock	shih
north	pei
south	nan
east	tung
west	hsi
water	shui
stream	ch'uan
river	kiang, ho
lake	hu
sea	hai
port, harbor	chiang, wan
great, big	ta, yangtze
little, small	hsiao
old	lao
white	pai
black	hei
red	hung
yellow	hwang

The main point of difficulty in reading Chinese maps lies in our inability to read Chinese characters. However, this should not inhibit the reader from tackling such a map when he has reason to believe the Chinese map might contain information not shown on other maps. There is a large amount of factual detail which can be obtained from any map regardless of the text in which it is printed, as certain symbols are basically the same the world over. The reader should look upon every map as being an aid to him in some respect.

Rivers, lakes, land relief, roads, trails, cities and towns, mountain peaks, passes, canals, railroads, bridges and dams; these are geographical features whose symbols vary so little among all foreign maps that the good map reader can understand them with almost no effort. The greatest mistake one can make in approaching any foreign map is to feel afraid of it. In *learning* to read foreign maps overconfidence is an asset. Here the individual will make mistakes, but in the process he will learn—only by being bold. On maps of Chinese or Japanese text, the officer should start working from known symbols and characters with this thought in mind.

All foreign maps of China and Japan (that is, maps not in Chinese or Japanese characters) must render their names phonetically. This results in such diferences as *Sian* in German whereas the same term (small) would be *hsiao* in English. The German rendition of the Chinese word for "stream" is *tschuan*, while in English it is *ch'uan*. The Chinese town as spelled on an American map, *Changli*, would appear as *Tschang Li* on a German map. *Nanking* in English differs from *Nankin*, as the name is rendered in French.

The standard system of writing the sound for Chinese characters is the *Wade*, named after Sir Thomas Wade, who invented it. The spelling of Chinese names originated from the sound of Chinese characters, so the observer will find the similarity between other foreign renditions of Chinese names in their sound. The actual source for English spelling of town names in China is the *Official Chinese Post Office Guide* published by the United States Government Printing Office.

The language is difficult; however, it is not quite so difficult to decipher as the symbols would indicate. The greater portion of Chinese characters are a combination of two parts. These two parts are termed the radical and the phonetic.

Radicals might be termed a sort of alphabetical or index structure upon which all characters are built. There are 214 radicals. The main function of the radical is to index the group to which any given character belongs. Radicals are listed according to the number of strokes each one contains. Some are complete words, others are simply structures upon which the full meaning characters are built. Generally the radical is to be found at the left of the character of which it is a part, although it can be at the top, bottom, or right.

The geographical equivalents listed ni the table for Chinese are for use with Chinese maps rendered in English text. *Ho* is the most common of all terms used for river; *Yangtze Kiang* means "Great River," and *Hwang-Ho* means "Yellow River"; *Hwang Hai* is "Yellow Sea"; *Han* is the Chinese word for cliff. The word *t'ien*, listed for field, actually means rice field.

TABLE V.—JAPANESE NUMERALS

English		Japanese (Chinese)	English		Japanese (Chinese)
zero*	0	〇	nine	9	九
one	1	一	ten	10	十
two	2	二	eleven	11	十一
three	3	三	twelve	12	十二
four	4	四	thirteen	13	十三
five	5	五	twenty	20	二十
six	6	六	twenty-two	22	二十二
seven	7	七	hundred	100	百
eight	8	八	thousand	1,000	千

*Sometimes the character for ten is used.

TABLE VI.—JAPANESE LINEAR MEASURE WITH ENGLISH AND METRIC EQUIVALENTS

Japanese	English	Metric
1 *bu*	1/9 inch	0.3 centimeter (.003 meter)
1 *sun*	1.2 inches	3.04 centimeters (.03 meter)
1 *shaku*	11.9 inches (.99 feet)	0.30 meter
1 *ken*	5.9 feet	1.82 meters
1 *cho*	119.0 yards	109.0 meters
1 *ri*	2.44 miles	3.93 kilometers

10 *bu* = 1 *sun*	1 meter = 3 *shaku*, 3 *sun* and 3 *bu*
10 *sun* = 1 *shaku*	1 kilometer = 9 *cho* and 10 *ken*
6 *shaku* = 1 *ken*	1 mile = 14.8 *cho*
60 *ken* = 1 *cho*	1 foot = 1.006 *shaku*
36 *cho* = 1 *ri*	1 inch = .84 *sun*

JAPANESE MAPS

The cartography of Japanese maps ranges from poor to excellent. They print maps in both English and Japanese. They are too often inconsistent in the spelling of place names in English, especially so with regard to their maps of Manchukuo and Northern China. Town names will be spelled one way, and provinces or regions of the same name will be spelled differently. Only in Korea, which is under Japanese control, do the spellings approach consistency. The difficulty of rendering Japanese names in English accounts for many misspellings.

The author has seen a letter from the Japanese Post Office Department which was in answer to an American query as to what was the official spelling of Tokyo. This Japanese letter stated that the correct spelling was "Tokyo." However, the envelope in which the letter came was postmarked with the spelling "Tokio." This is a typical example of their inconsistencies.

Like Chinese, the big difficulty with reading Japanese maps lies in the interpretation of the Japanese characters. Their writing was borrowed from the Chinese at a time when the Japanese had none of their own. Their pronunciation of these characters differs greatly from the Chinese pronunciation of these same ideographs. Chinese is a difficult language to read, write, and speak, but the Japanese is even more so. For a clear explanation of the structure of elementary Chinese and Japanese characters see *War Department M.I.S. Information Bulletin No. 14*. This contains an excellent discussion of this very difficult subject.

For Japanese topographical and military symbols the officer should refer to *War Department Technical Manual 30-480*. This document lists all symbols and their definitions. Some of these symbols can be seen on the Japanese map illustrated here (Insert). This particular map is an example of their better cartography. Its combination of contour lines and shading make for an effective portrayal of land relief, and the spot heights add further detail. Much can be learned from a study of this map with *TM 30-480* as reference text on the symbols.

Japanese and Chinese characters are a subject too complex for further discussion here with any benefit to the reader. Table V lists the characters for numbers which are easily interpreted. Fortunately, the strokes are the simplest, and these are characters which are easy to memorize. Numbers above ten are combinations of characters from one to ten; see twenty-two for an example.

NOTES ON GEOGRAPHICAL TERMS

Turkish.—This language is divided into the "Old" and the "New." The former is made up of the Arabic alphabet plus three Iranian (Persian) characters, and it contains both Arabic and Iranian words. The New language uses the Latin alphabet.

The word *dereler* is the plural for *dere*, valley; *adalar* plural for *ada*, island. There is no sure way of transliterating from Arabic into the "New Turkish" unless one possesses a knowledge of the old language. As both

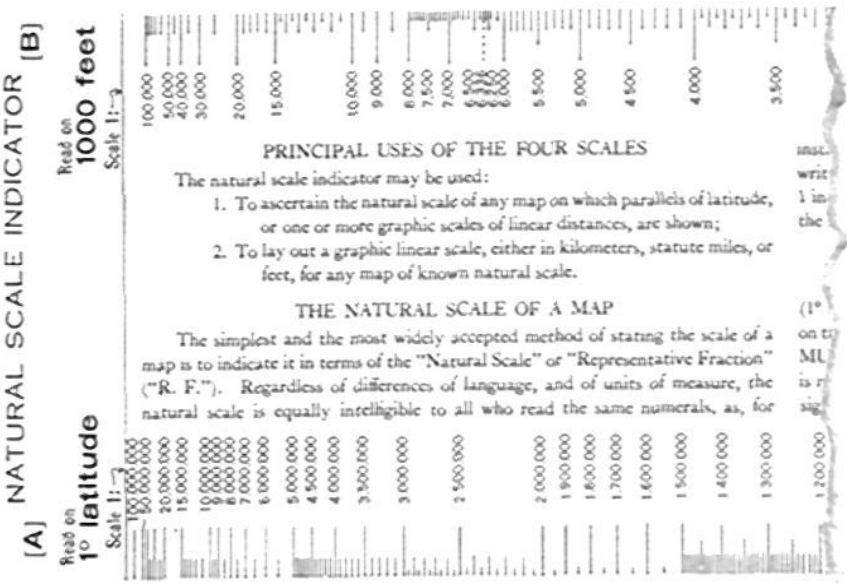


Figure 8.—Portion of "the Natural Scale Indicator"

Latin and Arabic are still in use, some confusion exists in geographical spellings.

Malay.—This is written in Arabic characters, and contains many words of Arabic. Pronunciation differs some from the Arabic. It is the most important language of the Asiatic East.

Figure 9.—Portion of an official Siamese map, scale 1:2,000,000, in Siamese text, showing Singapore and vicinity.

Hindustani.—This is the commercial language of India. Excellent British maps exist for India and adjacent areas.

Other Considerations

Accuracy.—One of the quickest indexes to the topographical securacy of a map can be found in the opservation of the coast, shore, and river lines. These not only reveal the accuracy of cartography, but the extent of survey. The key lies in the execution of these lines. For example, the upper sources of the Amazon River appear on maps as rivers of rather smooth and unwinding quality. However, from maps of lower reaches of these rivers it is a known fact that they twist and wind greatly. It is evident that these upper reaches have had little or no surveying, and the cartographer has no alternative but to connect up a series of widely separated known positions to make the lines of these rivers. Thus lack of survey is revealed by difference in character of river lines. Look at the shore lines of a lake in a territory well surveyed, and compare it with a lake in Central Asia where there is a lack of survey. The former is a lake of intricate detail whereas the latter will be a lake of a smoother shoreline.

For the accuracy of a map's cartography, study its shorelines. If a detailed shoreline has a tendency to wave in and out with somewhat the same regularity of indentation, the cartographer did not take care in executing the true irregularities. This is a carelessness in cartography and, if evident, the reader should watch for similar irregularities. In comparing maps for this remember that they should be of the same or nearly the same scale. The smaller the scale the more smooth the coast, shore, and river lines will appear.

Unknown Scale.—One of the most helpful devices for making use of foreign map material is a "Natural Scale Indicator." This is of thin hard cardboard 3 by 15 inches with scales on all four edges. It is used to determine the scale of a map when actual scale is unknown. In order to use this, there must be on the map a unit which is known to be either a statute mile, a kilometer, 1,000 feet, or one degree of latitude. The length of any one of these units will reveal the scale of the map in terms of Representative Fraction on the "Natural Scale Indicator." A scale for this purpose is printed by the United States Geological Survey. (See Figure 8.)

Type Faces.—In deciphering names on maps which use the Latin or Cyrillic alphabet, take the names by their (printed) type grouping. Most maps are made in such a way that the styles of type used suggest the features. For example, all mountain names will be in the same kind of type. Smaller ranges will of course be in a smaller size type. Town and city names use a perpendicular capital and lower case combination with letters shaded. State, province, district, county names will appear in perpendicular capital letters, which is the general rule for names of political divisions. All letters here will be shaded.

River, stream, and lake names take on a loose quality of lettering which generally resembles writing more than lettering. Mountain ranges and hills are named in a slanting and simple type with nothing but capital letters. Therefore, in looking for other geographical features of the same type as just transliterated, let the type faces guide.

TABLE VII.—ASIATIC EQUIVALENTS OF ENGLISH GEOGRAPHICAL NAMES

English	*Arabic*	*Japanese*	*Malay*	*Persian*	*Turkish*	*Hindustani*
city, town	medina, beled	shi, tokai	negri	sheher, abad	sheher	pura, nagar, -abad
borough	suk, belide		kampong	basar	basar, kasaba	besti, gram
village	kefr, gereh	mura	desa	dih		
hamlet					chan	
fortress, fort	qele, husn	yosai	benteng kotta	dis, derghale	kale, hissar	kot, durg
gate	bab	mon, kado	pintu	der	kapu	kewar
castle, palace	galat, qesr	shiro, kyuden	dalam	hissar, dis, eiwan	konak, saraj	derbar
house	beit	uchi	ruma	chane	ew	gra
bridge	shisr, kintere	hashi	tjukang	pul	kopru	pul
land	bilad, buldan, dar	rkiu, hondo	tanna, bumi	-san	jer, el, il	desht, watan
coast, shore	shat	kaigan, engan	tepi	kenar-i-derja		derja, kinare
island	tschesire	shima	pulo, nussa	tshesire	ada	tapu, dip
peninsula	tschesire	hanto		tshesire	tshesire	
plain, field	desht, tehameh	hara, heichi hatake, ta	padang, tagal	hamun	owa sher	maidan
desert	sahara	sabaku		desht, bejabar	kum, shol	
heath	hamad			charzar, char-istan		
swamp	hur[1]	numa	muara	abgir	batak	thel
forest, wood	ghabe	hayashi, mori[3]	utan	bishe	orman	shengel
mountains	djebel	-san,[2] yama	gunung, bukit	kuh	dagh	girwan, pahar
chain, range			pasir		bel	
cape	ras	misaki	tandjong	ser-i-kuh	dagh, burun	tek, ponta, eni
rock		iwa, banjaku	karang	seng	kaja	pathar
mount	djebel	mori	gunung, bukit	kuh	dagh, tau	gebirge
peak	kul, tel	itadaki	kapala	ser, bala	bash, tepe	
pass	abba, eber, mar	toge		derbent, teng	derbent, kapu, bojun	ghat
valley	wadi	tani	padang	dere	dere	
north	shemal	kita	utara	shemal	yeldis	uttur
south	temin	minami	kidol	shenub	gible	dekhan
east	sherk	higashi	wetan	bashter	gun	pureb
west	gherb	nishi	kulon	chawar	bati	petshnem
snow		yuki		berf		him
water	ma	mizu	aik, adjer	ab	su	tshel, paniya
spring, well	ain, bir	izumi, ido	assal, pohon	tsheshme	bunar quju	kuan
stream	seil	ogawa	soongi	tshu	irmadshik	
river	nahr, wed	kawa	kali	rud	irmaq	nedi
lake	birkeh	mizu-umi, ko	ranu, danu	derjatse	gol	
sea	bahr	umi	laut	derja	denis	derya
gulf		iri-umi, wan	legan	cher-i-derja		gub
bay	gobat	iri-umi, wan	telok, lebak	chelidshi-derja	liman	gubba
channel		kaikyo	selat		boghas	gele
straits		kaikyo				
lagoon				dehane-i-rud		
port, harbor	mers mina, chair	minato	laboan, telok	bendar	iskele	ghat, bendar
great, big	kebir	okii	besar	busurg	ulu, bojuk	maha, bera
little, small	seghir	chiisai	kitjil	churd		shota
long	ridh, tewil	nagai	pandiang	diras	usun	lamba
high	ali	takai	tinghi	bulent	juksek	untsha
upper	fokani	ue-no	udik, ala	bala	jokara	uper
lower	dun, tahta	motto hikui	ilir	pajin	ashaga	adher
old	kedim	furui	tua, umur	kohen	eski, erge	burha
new	shedid	atarashii	baru	nau	jeni, sanga	naya
white	bejad	shiroi	puti	sefid	bejad, ak	sukel
black	sauda	kuroi	itam	sijah	kara	kala
red	ehmer	akai	mera	surch	kizil	
green	chidr	midori, ao	hiedju	sebs	jeshil	harit
blue	serk, esrek	aoi	biru	kebud	gok	nila
yellow	esfer	kiiro	kuning	sert	sari	pit
fine, fair	hasn			chob	jaus	su-
saint	keddis	sei, seija				deua

[1]Plural is "ehwar." [2]Placed after name, that is, Fujisan. [3]Actually "Grove."

Spellings.—City, town, and village names on maps are or should be spelled according to the official postal guide of the nation concerned. Not all map makers practice this, but the better ones do. This is rapidly becoming a standard practice.

Most countries have such guides or lists which name the majority of their towns. Those which have not had them in past years are Spain, Afghanistan, Saudi Arabia, Persia, Ethiopia, Nepal, Bhutan, and a few other such countries which lack mapping bureaus. China has not had one of its own, nor has the Soviet Union. One for the latter nation was published in France, but, of course, its spellings of Russian names are in French, and some adjustments are necessary in order to obtain the correct English forms of these Russian names.

The best source for the spelling of all African and Asiatic names is the Royal (British) Geographical Society's P.C.G.N. (that is, Permanent Committee on Geographical Names) lists. English and American cartographers use these lists extensively. The lists give the geographical name in its actual local script, alphabet, or characters in addition to giving the prescribed English spelling.

The International 1:100,000 Series of Maps are the best small-scale English maps available for comparison with foreign maps. They cover the greater part of the land surfaces of the globe. Some sheets are out of date in respect to boundaries, but they do represent a compilation of the best maps for the particular area they cover. Their standard of cartography is very high. These maps can be obtained through the American Geographical Society, New York City.

SUMMARY

The greatest assets that one can have for reading any kind of a foreign map are patience and confidence. If the reader is willing to work hard at "deciphering" in the beginning he will find his map reading easier in the future.

In the final analysis, the terrain dictates military movements, whether they involve large operations or just a squad. A map is, therefore, as much of a weapon as a gun, and if properly used, the map will aid the user in making decisions which result in success.

Books named herein are not available for purchase. They may be found, however, in some unit and possibly public libraries.

NORTH AFRICAN COMMENTS

"Service here is most interesting. I am enjoying contacts with some French officers nearby—but I enjoyed my first contacts with a camel a lot less. They bite like a bulldog, and it almost takes a crowbar to open their jaws. There is just one rein. My beast was a plow camel (primary duty) and not used to riders, so ran away; when I hauled in enough slack to bring the brute's head to his shoulder, he bit me in the thigh.

"African heat, at least where we are, is over-rated. Any sum spent on a good bedding roll seems justified from this side."

FLEXIBILITY IMPERATIVE

During the entire initial operation of one 105-how. battalion in North Africa, FDC methods were used. Only forward observation methods of conduct of fire were employed, and were successful and rapid over observation ranges of as much as 9,000 yards. For maximum success the Battalion S-3 and Battery Executives (Btry FDC) must be gunnery experts. Flexibility is the keynote of the system.

Total time of a problem was tempered more by the time needed for fire for effect than by that for adjustment. For instance, in one case a battery fired 350 rounds at a single target in varying types of fire for effect, before accomplishing its mission: this target was a 240-mm. coast defense battery of three guns in concrete emplacements. Other missions required only 8 rounds for effect to accomplish. But with these methods, adjustment was always secured in a maximum of three rounds (precision fire) or salvos (if bracket fire was used).

FROM NORTH AFRICA

"The main gratification to us as artillerymen is to find that the things we have learned out of our Sill work are not only true and correct, but right down the old alley. It gives you a great deal more confidence to find that you have less difficulty in handling your tools under fire than on the firing point at school. The only thing is that to be able to have the utmost flexibility and power, you must 'throw the book' at them. In order to do this, it is essential that officers have all the necessary items of knowledge and technique at their finger tips. You find that you have no time to consult FMs and notes when machine guns are firing point-blank at you. Don't under-estimate the enemy's ability, because he is good and throws everything he can at you."